What is claimed is:

1. A photographing method in which fluorescent light emitted by a living-tissue subject that has been illuminated by stimulating light enters an image fiber and is guided toward the output face of said image fiber, and the fluorescent image formed at the output face of the image fiber is focused on the light-receiving zone of a photographing element and photographed by said photographing element,

wherein the relationship between the number of pixels Nf forming the fluorescent image on the output face of the image fiber and the number of pixels Nd receiving the light of the fluorescent image assembled within the light-receiving zone of the photographing element satisfy the condition expressed by the formula: $Nf \times 4 > Nd$.

2. A photographing method as defined in claim 1, wherein

a front-exposure type photographing element is employed as said photographing element, and at normal temperature or lower, the fluorescent image is photographed under photographing conditions set so that the sum of the number of electrons of readout noise produced on each pixel within the light-receiving zone receiving the light of a fluorescent image and the number of electrons of dark noise is 10 or less.

3. A photographing method as defined in claim 1 or 2, wherein

a rear-exposure type photographing element is employed as said photographing element, and at normal temperature or

lower, the fluorescent image is photographed under photographing conditions set so that the sum of the number of electrons of readout noise produced on each pixel within the light-receiving zone receiving the light of a fluorescent image and the number of electrons of dark noise is 20 or less.

4. A photographing method as defined in claim 1 or 2, wherein

said fluorescent image is focused such that the number of the light-receiving zone receiving the light of the fluorescent image is 40,000 or less, and said fluorescent image is photographed.

5. A photographing method as defined in claim 3, wherein

said fluorescent image is focused such that the number of the light-receiving zone receiving the light of the fluorescent image is 40,000 or less, and said fluorescent image is photographed.

6. A photographing method as defined in claim 1 or 2, wherein

the size of the fluorescent image focused on the light-receiving zone of the photographing element is changed corresponding to the quantity of light of said fluorescent image received at said photographing element.

7. A photographing method as defined in claim 3, wherein

the size of the fluorescent image focused on the light-receiving zone of the photographing element is changed corresponding to the quantity of light of said fluorescent image

received at said photographing element.

8. A photographing method as defined in claim 4, wherein the size of the fluorescent image focused on the light-receiving zone of the photographing element is changed corresponding to the quantity of light of said fluorescent image received at said photographing element.

9. A photographing method as defined in claim 5, wherein the size of the fluorescent image focused on the light-receiving zone of the photographing element is changed corresponding to the quantity of light of said fluorescent image received at said photographing element.

10. A photographing method as defined in claim 1 or 2, wherein

for cases in which said photographing element is capable of reading out in a random manner the signal charge stored on each pixel, a readout zone narrower than said light-receiving zone and which contains the fluorescent image is set within said light-receiving zone, and readout of said readout zone is performed prior to readout of other zones within said light-receiving zone.

11. A photographing apparatus comprising:

an optical system for directing fluorescent light emitted from a living-tissue subject illuminated by stimulating light into an image fiber, wherein said fluorescent light is guided to the output face of the image fiber, an image focusing means for focusing on the light-receiving zone of the photographing

element the fluorescent image formed by the fluorescent light guided to the output face of the image fiber, and a photographing means for photographing the fluorescent image focused on the light-receiving zone thereof, wherein

said fluorescent image is focused on said light-receiving zone, wherein the relationship between the number of pixels Nf forming the fluorescent image on the output face of the image fiber and the number of pixels Nd receiving light of the fluorescent image assembled within the light-receiving zone of the photographing element satisfies the condition expressed by the formula: $Nf \times 4 > Nd$.

12. A photographing apparatus as defined in claim 11, wherein

said photographing element is provided as a front-exposure type photographing element, in which the photographing conditions are set so that at normal temperature or lower the sum of the number of electrons of readout noise produced on each pixel within the light-receiving zone receiving the light of a fluorescent image and the number of electrons of dark noise is 10 or less.

13. A photographing apparatus as defined in claim 11, wherein

said photographing element is provided as a rear-exposure type photographing element, in which the photographing conditions are set so that at normal temperature or lower the sum of the number of electrons of readout noise produced on

each pixel within the light-receiving zone receiving the light of a fluorescent image and the number of electrons of dark noise is 20 or less.

14. A photographing apparatus as defined in claim 11, 12 or 13, wherein

the image focusing means focuses said fluorescent image in a manner in which the number of pixels of the light-receiving zone receiving the light of the fluorescent image is 40,000 or less.

15. A photographing apparatus as defined in claim 11, 12 or 13, wherein

said image focusing means is capable of changing, corresponding to the quantity of light of said fluorescent image received at said photographing element, the size of the fluorescent image focused on the light-receiving zone of said photographing element.

16. A photographing apparatus as defined in claim 11, 12 or 13, wherein

said photographing means is capable of reading out in a random manner the signal charge stored on each pixel, and sets a readout zone narrower than the light-receiving zone and which contains the fluorescent image within the light-receiving zone, and

said photographing means is provided with a readout control means for carrying out read out of said readout zone prior to readout of other zones within the light-receiving zone.

17. A photographing apparatus as defined in claim 14 wherein

said photographing means is capable of reading out in a random manner the signal charge stored on each pixel, and sets a readout zone narrower than the light-receiving zone and which contains the fluorescent image within the light-receiving zone, and

said photographing means is provided with a readout control means for carrying out read out of said readout zone prior to readout of other zones within the light-receiving zone.

18. A photographing apparatus as defined in claim 15 wherein

said photographing means is capable of reading out in a random manner the signal charge stored on each pixel, and sets a readout zone narrower than the light-receiving zone and which contains the fluorescent image within the light-receiving zone, and

said photographing means is provided with a readout control means for carrying out read out of said readout zone prior to readout of other zones within the light-receiving zone.

19. A photographing apparatus as defined in claim 15 wherein

said photographing means is capable of reading out in a random manner the signal charge stored on each pixel, and sets a readout zone narrower than the light-receiving zone and which contains the fluorescent image within the light-receiving

zone, and

said photographing means is provided with a readout control means for carrying out read out of said readout zone prior to readout of other zones within the light-receiving zone, which is also capable of changing the size of said readout zone.

20. A photographing apparatus as defined in claim 11, 12 or 13, wherein

said photographing element sequentially reads out the signal charge stored on each pixel, and is structured so that said fluorescent image is assembled at the closest position of the readout port of said photographing element within said light-receiving zone.

21. A photographing apparatus as defined in claim 14 wherein

said photographing element sequentially reads out the signal charge stored on each pixel, and is structured so that said fluorescent image is assembled at the closest position of the readout port of said photographing element within said light-receiving zone.

22. A photographing apparatus as defined in claim 15 wherein

said photographing element sequentially reads out the signal charge stored on each pixel, and is structured so that said fluorescent image is assembled at the closest position of the readout port of said photographing element within said light-receiving zone.

23. A photographing apparatus as defined in claim 15 wherein

said photographing element sequentially reads out the signal charge stored on each pixel, and

said photographing element is provided with an focusing-position changing means capable of changing the position at which said fluorescent image is assembled within said light-receiving zone.

24. A photographing method in which:

employing a photographing element for sequentially transferring and reading out the charge stored on each light receiving pixel, a light-image of a subject is focused on the light-receiving zone of said photographing element, and

said assembled light image is photoelectrically converted at and stored as a signal charge on each light-receiving pixel within said light-receiving zone, and

said stored signal charge is converted to an image signal and read out, wherein

said light-image is focused on a readout zone formed from less than the total number of pixels within the light-receiving zone, and

the readout signal charge transferred to and stored on the light-receiving pixels contained in said light-receiving zone is read out as said image signal and the residual signal charge transferred to and stored on the light-receiving pixels in the non-readout zone outside the readout zone is read out

as empty.

25. A photographing method as defined in claim 24, wherein said sequentially transferred signal charge is subjected to binning processing before said readout signal charge is read out.

26. A photographing method in which:

employing a photographing element for sequentially transferring and reading out the charge stored on each light-receiving pixel, a light-image of a subject is focused on the light-receiving zone of said photographing element, and

said assembled light image is photoelectrically converted at and stored as a signal charge on each light-receiving pixel within said light-receiving zone, and

said stored signal charge is converted to an image signal and read out, wherein

said light-image is focused on a readout zone formed from less than the total number of pixels within the light-receiving zone, and

the readout signal charge transferred to and stored on the pixels contained in said light-receiving zone is read out as said image signal and the residual signal charge transferred to and stored on the light-receiving pixels in the non-readout zone outside the readout zone is discarded via a clearing drain.

27. A photographing method in which:

employing a photographing element capable of reading out in a random manner the charge stored on each pixel,

a light-image of a subject is focused on the light-receiving zone of said photographing element, and

said assembled light image is photoelectrically converted at and stored as a signal charge on each light-receiving pixel within said light-receiving zone, and

said stored signal charge is converted to an image signal and read out, wherein

said light-image is focused on a readout zone formed from less than the total number of pixels within the light-receiving zone, and

the readout signal charge transferred to and stored on the pixels contained in said light-receiving zone is read out as said image signal and the residual signal charge transferred to and stored on the light-receiving pixels in the non-readout zone outside the readout zone or said residual signal charge grouped together with the signal charge stored on the light-received pixels contained in said light-receiving zone after said readout signal charge has been read out are read out as empty for each block or one pixel at a time.

28. A photographing apparatus comprising a photographing element, an image focusing means for focusing a light-image of a subject within the light-receiving zone of said photographing element, said photographing element comprising a photoelectric conversion portion for photoelectrically converting at each light-receiving pixel within said light-receiving zone the light received thereon to a signal

charge and storing said signal charge on each of said pixels, a charge transfer portion for sequentially transferring the signal charge stored on each of said light-receiving pixels, and a readout portion for converting said sequentially transferred signal charge to an electric image signal and reading out said image signal, wherein

said light-image is focused on a readout zone formed from less than the total number of pixels within the light-receiving zone, and

further comprising a sequential-readout control means for controlling the reading out, by the sequential-readout portion, of the readout signal charge stored on the light-receiving pixels of said readout zone as an image signal and the reading out, by said sequential-readout portion, as empty of the residual signal charge stored on the light-receiving pixels of the non-readout zone outside said readout zone.

29. A photographing apparatus as defined in claim 28, further comprising

a gate provided between said charge conversion portion and said sequential-readout portion for controlling passage of the signal charge from said charge conversion portion to said sequential-readout portion, and a gate control means for controlling said gate so as to facilitate the subjecting of said readout signal charge to binning processing before said readout signal charge is transferred by said charge conversion portion and read out by said sequential-readout portion.

30. A photographing apparatus comprising a photographing element, an image focusing means for focusing a light-image of a subject within the light-receiving zone of said photographing element, said photographing element comprising a photoelectric conversion portion for photoelectrically converting at each light-receiving pixel within said light-receiving zone the light received thereon to a signal charge and storing said signal charge on each of said light-receiving pixels, a charge transfer portion for sequentially transferring the signal charge stored on each of said light-receiving pixels, and a readout portion for converting said sequentially transferred signal charge to an electric image signal and reading out said image signal, wherein

said light-image is focused on a readout zone formed from less than the total number of pixels within the light-receiving zone, and

further comprising a clearing drain for discarding the signal charge sequentially transferred by said charge converting portion, and a sequential-readout control means for controlling the reading out, by said sequential-readout portion, of the readout signal charge stored on the light-receiving pixels of said readout zone, and the discarding of the residual signal charge stored on the light-receiving pixels of the non-readout zone outside the readout zone into said clearing drain.

31. A photographing apparatus as defined in claim 30, further comprising

a first gate provided between said charge transfer portion and said sequential-readout portion for controlling passage of the signal charge from said charge transfer portion to the sequential-readout portion, a second gate provided between said charge transfer portion and said clearing drain for controlling passage of the signal charge from the charge transfer portion to the clearing drain, and a gate control means for controlling gate 1 and gate 2 so as to facilitate the subjecting of said readout signal charge to binning processing before said readout signal charge is transferred by said charge conversion portion and read out by said sequential-readout portion.

32. A photographing apparatus comprising a photographing element, an image focusing means for focusing a light-image of a subject within the light-receiving zone of said photographing element, said photographing element comprising a photoelectric conversion portion for photoelectrically converting at each light-receiving pixel within said light-receiving zone the light received thereon to a signal charge and storing said signal charge on each of said light-receiving pixels, a pixel selecting means capable of randomly selecting pixels from among said light-receiving pixels, and a random readout portion for converting the signal charge of said selected light-receiving pixels to an electric image signal and reading out said image signal in a random manner, wherein

said light-image is focused on a readout zone formed from

less than the total number of pixels within the light-receiving zone, and

a random-readout control means for controlling said pixel selecting portion and said random readout portion so that the light-receiving pixels of said readout zone are selected by said pixel selecting means, and after the readout signal charge stored on said selected light-receiving pixels is read out by said random readout portion, the residual signal charge stored on the light-receiving pixels contained in the non-readout zone outside the readout zone, or said residual signal charge grouped together with the signal charge stored on the light-receiving pixels contained in said readout zone after readout of the readout signal charge are read out from said random readout portion as empty for each block or one pixel at a time.

33. A photographing apparatus as defined in claim 32, wherein

said readout signal charge is subjected to binning processing so that a plurality of light-receiving pixels within said readout zone is simultaneously selected by said pixel selecting means, and the multiplied signal charge of each readout signal charge stored on said plurality of selected light-receiving pixels is converted to an electric image signal and read out by said random reading portion.

34. A photographing apparatus as defined in claim 26, 27, 28, 29, 30, 31, 32 or 33, wherein

said image focusing means is provided with a zooming optical system, and by use of said zooming optical system is capable of changing the size of the light image assembled within the light-receiving zone.

35. A photographing apparatus as defined in claim 34, wherein the readout frequency of said photographing element changes in correspondence to the zooming rate of the zooming optical system.

36. A fluorescent endoscope implementing the photographing apparatus as defined in claim 28, 29, 30, 31, 32 or 33.

37. A fluorescent endoscope implementing the photographing apparatus as defined in claim 34.

38. A fluorescent endoscope implementing the photographing apparatus as defined in claim 35.

39. A photographing method as defined in claim 1 or 2, wherein the photographing element is a charge-amplifier type photographing element for amplifying the charge by impact ionization.

40. A photographing method as defined in claim 24, 25, 26, 27 or 28, wherein the photographing element is a charge-amplifier type photographing element for amplifying the charge by impact ionization.

41. A photographing apparatus as defined in claim 11, 12 or 13, wherein the photographing element is a charge-amplifier

type photographing element for amplifying the charge by impact ionization.

42. A photographing apparatus as defined in claim 29, 30, 31, 32 or 33, wherein the photographing element is a charge-amplifier type photographing element for amplifying the charge by impact ionization.